

REMARKS/ARGUMENTS

This is in response to the Examiner's communication dated November 28, 2006.

I. Introduction

Claims 1–35 are pending in the above application.

Claims 8 and 24 are indicated as being allowable if rewritten in independent form including all of the limitation of the base claim and any intervening claims.

Claims 1–3, 6, 7, 9–19, 22, 23 and 25–35 stand rejected under 35 U.S.C. §102(b).

Claims 4, 5, 20 and 21 stand rejected under 35 U.S.C. §103(a).

II. Amendments

First, applicant would like to thank the Examiner for indicating that claims 8 and 24 are allowable if rewritten in independent form including all of the limitation of the base claim and any intervening claims.

The applicant has amended independent claims 1, 17 and 25 to more clearly claim the invention in view of the Examiner's objections. In particular, the claims have been amended to more clearly claim applicant's invention as wireless. Support for the amendment can be found in the original specification as filed, for example, paragraph [0001] and [0086].

III. Rejection Under 35 U.S.C. §102(b)

Claims 1–3, 6, 7, 9–19, 22, 23 and 25–35 stand rejected under 35 U.S.C. §102(b) as being anticipated by Billeter et al. (3,927,369). Applicant respectfully traverses this rejection. Anticipation under 35 U.S.C. §102 requires that each and every element of the claim be disclosed in a prior art reference as arranged in the claim. See *C. R. Bard, Inc. v. M3 Sys., Inc.*, 157 F. 3d 1340, 1349, 48 USPQ 2d (Fed. Cir. 1998); and *Connell v. Sear, Roebuck & Co.*, 220 USPQ 193, 198 (Fed. Cir. 1983).

Billeter et al. employs an RF cavity to measure physical parameters such as pressure. It is clear from the description of Billeter et al, applicant submits, that it is intended that this measurement be taken with a waveguide or similar electrical connection to the RF cavity. For example, see column 3 line 38–41 of Billeter et al. In fact, applicant submits that the sensor of Billeter et al. is always connected through a metallic waveguide, see for further example, column 3, line 40; column 4, line 66, column 5, line 11; column 5, line 22; column 6, line 63; column 7, line 2; column 10, line 19; column 11, line 11.

Billeter et al. relies on having a good connection without interfering signals for the method of that patent to work. If interfering signals are present then the resonant frequency cannot unambiguously be determined. Specifically, in Figure 6 of Billeter et al., the resonant frequency is estimated through the response of the sensor to a frequency-modulated signal. A key assumption is that a single peak minimum occurs in the received signal in the region of interest (at the resonator resonance). However, if the connection between the interrogator and the sensor is severed and a wireless connection is used, uncontrolled signals are introduced that make an unambiguous determination of the resonant frequency impossible.

In applicants' invention the sensor wirelessly receives the interrogation signal, and the interrogator wirelessly receives the response signal. This allows a simple

and rugged construction to be employed by applicants' invention so that a passive embedded sensor can be provided which is wirelessly interrogated thereby eliminating the need for a power source and any permanent electrical or optical connections that are subject to breaking, becoming dislodged or damaged by vandals. In addition, the sensors work independently of one another due to the lack of electrical or optical hardwiring. Accordingly, if for some reason one of the sensors is not functioning properly it will not have any effect on the operability of any of the other sensors. This is clearly distinct from Billeter et al.

For anticipation, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Moreover, the elements must be arranged as required by the claim. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Billeter et al. does not disclose, as now claimed in independent claims 1 and 17 and 25, a system, sensor and method for measuring strain experienced by a structure, where the sensor includes a body having an electromagnetic cavity, the electromagnetic cavity adapted to produce a response signal in response to an interrogation signal, the interrogation signal wirelessly received by the sensor, the body being coupled to the structure to allow the strain to alter the resonance properties of the electromagnetic cavity thereby altering the response signal, a coupler coupled to the body, the coupler adapted to transfer the interrogation signal into the electromagnetic cavity and transfer the response signal out of the electromagnetic cavity, and an interrogator being adapted to generate and wirelessly transmit the interrogation signal to the sensor, the interrogator being further adapted to wirelessly receive the response signal. Accordingly Billeter et al. does not anticipate the invention as now claimed.

The dependent claims depend from these claims and therefore incorporate the limitations recited above with respect to the independent claims.

Accordingly, applicant submits that the dependent claims are not anticipated by the Billeter et al. reference.

IV. Rejection Under 35 U.S.C. §103(a)

Claims 4, 5, 20 and 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Billeter et al. in view of Perlman (3,715,686). Applicant respectfully traverses this rejection.


As previously mentioned, Billeter et al. does not disclose, as in applicants' invention, that the sensor wirelessly receives the interrogation signal, and the interrogator wirelessly receives the response signal. Perlman discloses a cavity of different dimensions to support multiple electromagnetic modes. However, the coupling to these modes is by a hard wired connection. Accordingly, there can be no prima facie case of obviousness of modifying Billeter et al. with Perlman to provide the invention as now claimed. In this regard see *In re Pye*, 148 USPQ 426, 429 (CCPA 1966) wherein the court held:

"While, as an abstract proposition, it might be possible to select certain statements from Fikentscher a mechanically combined and with Touey to arrive at appellants' claimed combination, we find absolutely no basis for making such a combination. Neither reference is directed to the problem solved by appellants' invention, namely developing a cleaning composition for the skin having improved lubricity characteristics. In our view only appellants' specification suggests any reason for combining the teachings of the prior art but use of such suggestion is, of course, improper under the mandate of 35 U.S.C. 103. *In re Schaffer*, 43 CCPA 758, 229 F.2d 476, 108 USPQ 326." (emphasis added)."

Applicant submits that this case is in condition for allowance. However, should the Examiner have any concerns with the claims as amended, applicant invites the Examiner to call the undersigned at (416) 957-1697 to discuss the case and avoid the expense and time of issuing a further communication.

Respectfully submitted,

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